A. CAMPBELL.

DIVERTIBLE BALLAST CAR.

APPLICATION FILED JUNE 10, 1915.

1,174,677.

Patented Mar. 7, 1916.

3 SHEETS—SHEET 1.

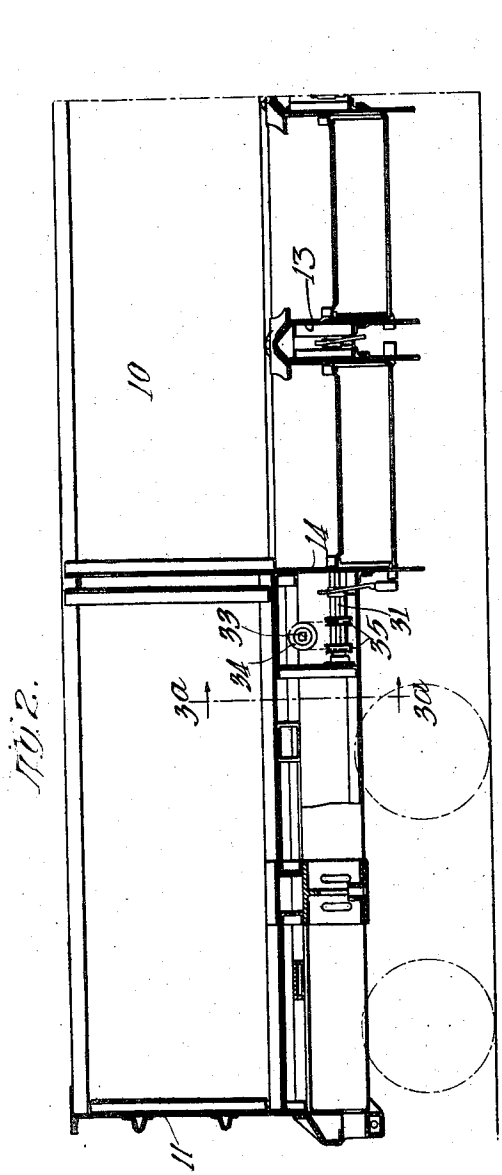


Fig. 2.

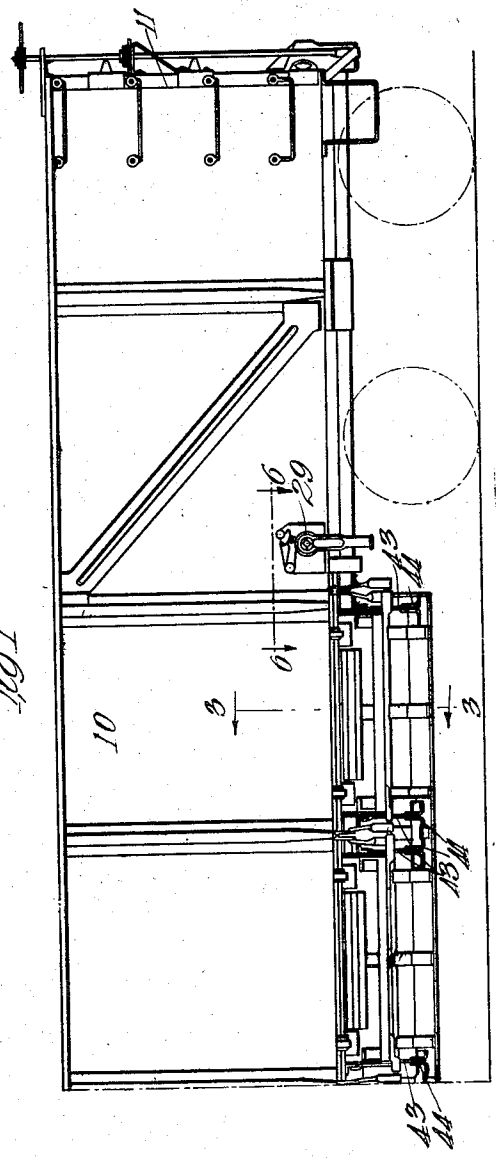


Fig. 1.

Witnesses:
Arthur H. Carlson
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Inventor:
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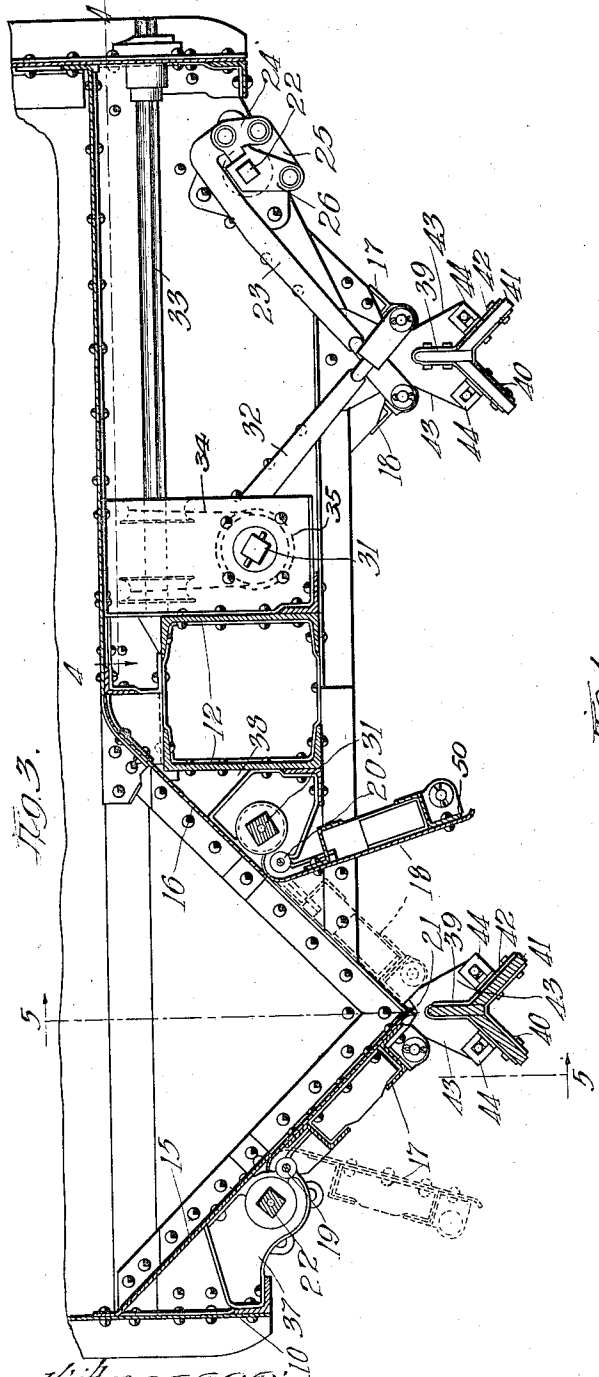


FIG. 3.

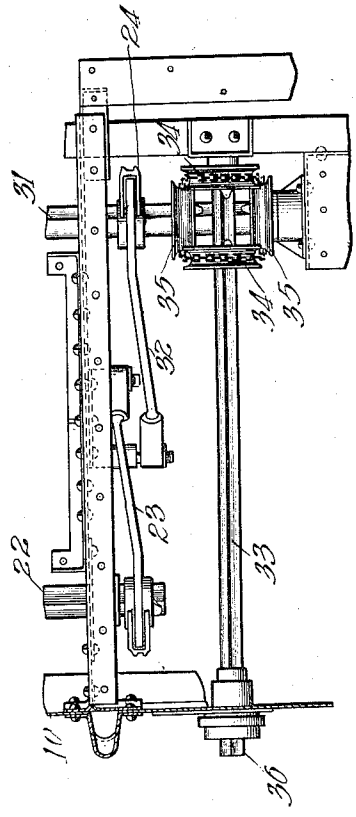


FIG. 4.

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3 SHEETS—SHEET 3.

Fig. 5

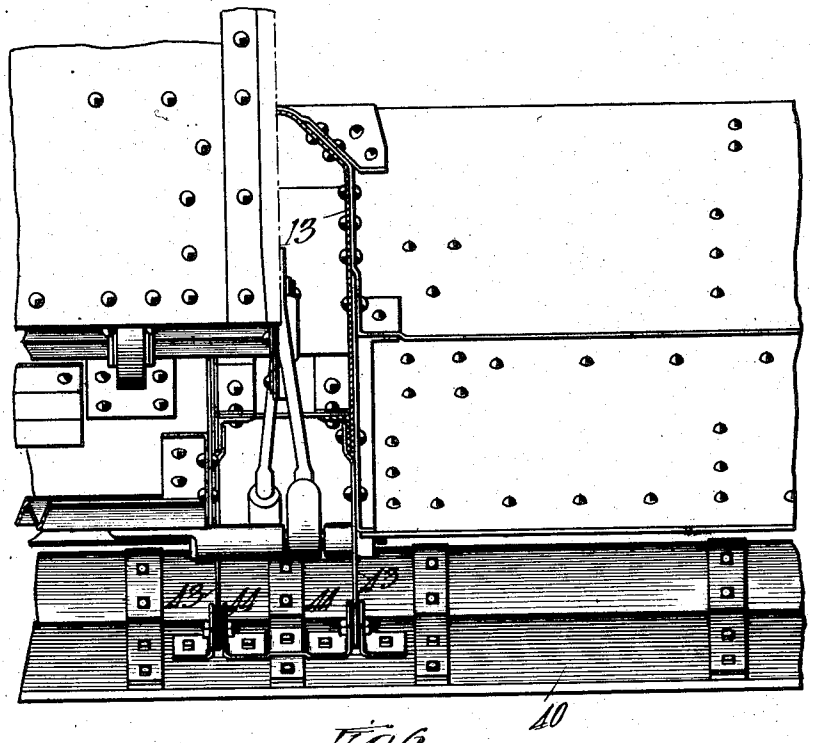
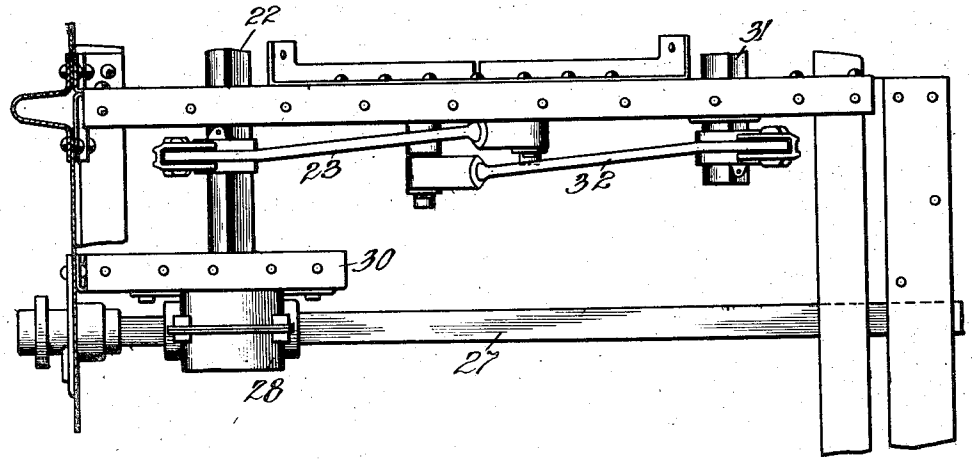


Fig. 6.



Witnesses:

Arthur W. Carlson

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Inventor:

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UNITED STATES PATENT OFFICE.

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DIVERTIBLE BALLAST-CAR.

1,174,677. Specification of Letters Patent. Patented Mar. 7, 1916.

Application filed June 10, 1915. Serial No. 33,237.

To all whom it may concern:

Be it known that I, ARGYLE CAMPBELL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Divertible Ballast-Cars, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to improvements in divertible ballast cars.

An object of the invention is to provide a ballast car having means for diverting the load or ballast to either side of the tracks and at the same time so arrange the doors of the hoppers that large door opening area is provided.

Another object of the invention is to provide a car having center dump and side dump doors so arranged that the center dumping doors may be operated simultaneously and from operating shafts located along the outer sides of the hoppers and the side dumping hopper doors also operated simultaneously from operating shafts located between the hoppers.

The invention furthermore consists in the improvements in the parts and devices and in the novel combinations of the parts and devices, herein shown, described or claimed.

In the drawing forming a part of this specification, Figure 1 is a side elevation of approximately one-half of a ballast car showing my improvements in connection therewith. Fig. 2 is a central longitudinal vertical sectional view of substantially the remaining half of the car. Fig. 3 is an enlarged transverse vertical sectional view, the left-hand portion of which is taken on the line 3—3 of Fig. 1 and the right-hand portion of which is taken on the line 3^a—3^a of Fig. 2. Fig. 4 is a horizontal sectional view showing in detail some of the operating mechanism and taken on a line corresponding to 4—4 of Fig. 3 but on the opposite side of the car. Fig. 5 is a part side elevation, part vertical sectional view, the sectional view being taken on the line 5—5 of Fig. 3, and Fig. 6 is another horizontal sectional view showing in detail some of the door operating mechanism, the section being taken substantially on the line 6—6 of Fig. 1.

In said drawing, 10—10 denote the sides of the car, 11—11 the end walls, and 12 the center sill construction which, in the form shown, comprises channels and tie plates forming a girder like structure. Intermediate the trucks, the car is provided with a hopper section which, as shown, consists of four hoppers longitudinally arranged on each side of the center sill, the hoppers being separated from each other by diaphragms consisting of inverted U-shaped sheets 13, the depending side portions of said sheets forming the end hopper sheets of the various hoppers. At each end of the series of hoppers, other diaphragm members 14 are provided, preferably in the form of a single sheet suitably braced with angles and flanges. (See Fig. 2.) As shown most clearly in Fig. 3, each hopper is provided with an outer downwardly and inwardly inclined bottom sheet 15 and an inner, downwardly and outwardly inclined bottom sheet 16, said bottom sheets 15 and 16 forming substantially half of the bottoms of the hoppers. The remaining portions of the hopper bottoms are formed by side dumping hinged doors 17 and center dumping hinged doors 18, the former being hinged along their upper edges substantially at the lower edges of the hopper sheets 15, as indicated at 19. The center dumping hopper doors 18 are hinged along their upper edges substantially along the bottom edges of the hopper sheets 16, as indicated at 20. Each pair of doors 17—18 for each hopper when in closed position, are adapted to have their lower edges meet as indicated at 21 in Fig. 3. For strength, all of the doors 17 and 18 are suitably braced by Z-bars or other suitable commercial structural shapes.

Extending lengthwise of the car, and on the outer sides of the hoppers, are operating shafts 22—22, the latter being adapted to operate the inner set or center dumping doors 18—18 by means of elongated hook shaped links 23 and short pivotally connected links 24 and 25, the latter being pivotally connected to an arm 26 of a drum or hub secured to the corresponding shaft 22. (See Fig. 3). By referring to Fig. 6, it will be seen that the operating shafts 22—22 are operated simultaneously by means of a transversely extending shaft 27 having a worm and worm gear connection 28 with each of the shafts 22. The shaft 27 has one or both of its ends extended to the side of the car and is adapted to be actuated by

any suitable pawl and ratchet mechanism, as indicated conventionally at 29 in Fig. 1. Each worm and worm gear for each shaft 22 (not shown in detail, but only indicated conventionally at 28 in Fig. 6) is supported by a depending bracket or plate 30 as shown in Fig. 6. For operating the outer or side dumping doors 17, a pair of longitudinally extending operating shafts 31—31, are provided each being located between the center sill and adjacent hopper sheets 16. Between the shafts 31 and the doors 17 are the flexible operating connections each of which as shown, comprises an elongated hook shape link 32 (see Fig. 3) and short links and drums corresponding to those referenced 24, 25 and 26, as will be understood. The shafts 31—31 are also adapted to be operated from cross shafts 33 (see Figs. 2 and 4), each of said shafts 33 being provided with chain pulleys 34—34, from which extend chains (not shown) that pass around corresponding pulleys 35—35 located on the longitudinal shafts 31. The shafts 33 are located opposite each other at the left hand end of the car, as viewed in Fig. 2, and each is extended at its end to the side of the car and provided with a squared section 36 whereby the same may be actuated by a claw bar or other suitable instrument. As clearly appears in Fig. 3, the shafts 22 and 31 are suitably mounted in bearing brackets 37 and 38 suitably secured to the under-frame and hopper sheets of the car. The operating linkages for the doors, except those at the extreme ends, are located within the U-shaped diaphragm members 13 which thus protect the operating mechanism as will be understood. The operating linkages at the ends of the hoppers are located beyond the diaphragm members 14—14. In this connection, it will be understood that all the doors of a set are connected by longitudinally extending bars 50 so that all will be operated simultaneously in a well-known manner.

In order to properly divert the ballast to the desired sides of the rails, I have provided longitudinally extending diverting boards. Each of these diverting boards for each series of hoppers on each side of the center sill, comprises a vertically extending board 39, an outwardly and downwardly inclined board 40 and a downwardly and inwardly inclined board 41, said boards 38, 40 and 41 being braced and tied together by means of suitable straps 42. To support the diverting boards, depending brackets 43—43 are provided attached to the diaphragms 13 and 14 and the bracing angles associated therewith, the diverting boards being secured to said brackets by means of suitable angles 44—44 (see Figs. 3 and 5.)

From the entire preceding description it will be seen that the operating mechanism is so arranged that a load may be dumped to points outside of the rails or to points within the rails. Also, the operating shafts and connections therebetween and the hopper doors are so located that the same are well protected and free from the danger of being injured by any of the load being dumped. Furthermore, whenever desired, a large door opening area may be utilized, thus facilitating the unloading of the car.

I claim:

1. In a divertible ballast car, the combination with a car body having a hopper section, of hinged center dumping hopper doors, said hopper doors being arranged to have their free edges brought into contact with each other when in closed position, said doors swinging about axes extending longitudinally of the car, and longitudinally extending, fixed, diverting partitions located beneath and spaced from said meeting edges of the doors, each diverting partition comprising a longitudinally arranged vertically extending member, an outwardly and downwardly inclined member, and an inwardly and downwardly inclined member, there being a plurality of hoppers on each side of the center sill of the car and said diverting partitions extending continuously from one hopper to the other.

2. In a divertible ballast car, the combination with a car body having longitudinally arranged sets of hoppers on each side of the center sill, hinged center dumping doors for said hoppers, operating shafts for said doors extending longitudinally of the car and on the outer sides of the hoppers, side dumping hopper doors and longitudinally extending shafts for said side dumping doors located between the hoppers.

3. In a car of the character described, the combination with a car body having longitudinally arranged sets of hoppers on each side of the center sill, hinged center dump hopper doors, longitudinally extending operating shafts for said doors arranged on the outer sides of said hoppers, means for operating said shafts and thereby said doors, side dumping hopper doors, and longitudinally arranged operating shafts therefor located between the hoppers.

4. In a car of the character described, the combination with a car body having longitudinally arranged sets of hoppers, one set on each side of the center sill, hinged center dump doors for said hoppers, operating mechanism for said doors, side dumping hopper doors, longitudinally arranged operating shafts for said side dumping doors located between the said hoppers, and mechanism for operating said last named shafts.

5. In a divertible ballast car, the combination with a car body having longitudinally arranged sets of hoppers on each side of the center sill, of hinged center dumping

doors for said hoppers, operating shafts for said doors extending longitudinally of the car and on the outer sides of the hoppers, side dumping hinged hopper doors for said hoppers, and means, including a longitudinally extending shaft located between the hoppers, for operating said side dumping doors.

6. In a car of the character described, the combination with a car body having longitudinally arranged sets of hoppers on each side of the center sill, and provided with inverted U-shape diaphragms, of center dumping and side dumping doors for each of said hoppers, longitudinally arranged door operating shafts located on the outer sides of said hoppers, longitudinally arranged door operating shafts located between said hoppers, and connections from said shafts to said doors, some of which are disposed within said inverted U-shaped diaphragms.

7. In a divertible ballast car, the combination with a car body having a hopper section, the hoppers being arranged in sets extending lengthwise of the car, one set on each side of the center sill, of hinged center dumping and hinged side dumping doors for each of said hoppers, the doors of each hopper arranged to have their free edges meet when in closed position, a longitudinally extending diverting board on each side of the longitudinal center of the car, said diverting boards being located beneath the meeting edges of said doors, longitudinally arranged operating shafts located on the outer sides of said hopper, connections between said shafts and the center dumping doors, longitudinally arranged operating shafts located between the hoppers and connections between said last named shafts and the side dumping doors.

8. In a divertible ballast car, the combination with a car body having longitudinally arranged sets of hoppers on each side of the center sill, center dumping doors for said hoppers and hinged along their upper edges, operating shafts for said doors extending longitudinally of the car and located on the outer sides of said hoppers, side dumping hopper doors hinged along their upper edges, and longitudinally extending shafts for said side dumping hopper doors located between the hoppers.

In witness that I claim the foregoing I have hereunto subscribed my name this 6th day of May 1915.

ARGYLE CAMPBELL.

Witness:
JOSEPH HARRIS.